

# PATENT ABSTRACTS OF JAPAN

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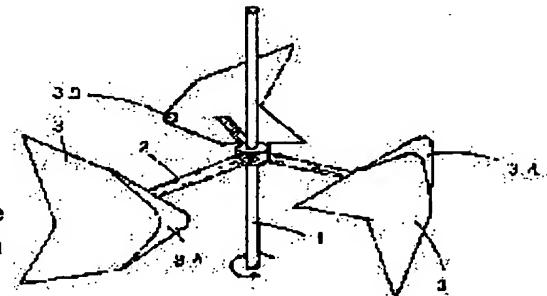
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## (54) VERTICAL SHAFT WINDMILL TO BE LAYERED AND MOUNTED ON MULTISTORY TOWER

### (57) Abstract:

**PURPOSE:** To make a vertical shaft windmill always act as a shape to generate lift, and generate the lift surely in rotary operation by forming a shape of a vane cross section of a main vane in a symmetric vane shape, and forming the side surfaces of a duct blade in a ship bottom shape.

**CONSTITUTION:** A front cover part 3A to cover a front part by forming the side surfaces in a ship bottom shape on the outer peripheral part side of a main vane 2, is formed on the main vane 2 whose vane cross section is formed in a symmetric vane shape on a windmill rotary shaft 1. Next, a duct blade 3 formed by arranging a ventilating port 3B in the formed front cover part 3A so as to improve an air current flow, is fixed to/installed on the main vane 2 by giving a certain degree of elevation angle in the motional direction. A part corresponding to the keel of a ship bottom in a central part of the duct blade 3 is used as a keel part formed in a rocket shape, and canvases are installed above and below the keel part, and a sail wing windmill blade is formed. Thereby, since an effect to facilitate starting by a weak wind is obtained, wind power energy can be utilized most effectively.



### LEGAL STATUS

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## [Claim(s)]

[Claim 1] In the configuration of the vertical-axes wind mill for laminating loading to an upper-layers tower to a wind-mill revolving shaft (1) The main plane (2) formed in opposite \*\*\*\*\* in the airfoil profile is fixed to a wind-mill revolving shaft (1). Installation, The vertical-axes wind mill for laminating loading to the upper-layers tower characterized by considering as the wind mill constituted by the duct blade (3) which formed the side face in the periphery section of the main plane (2) at the ship's-bottom form, formed the before covering device (3A) ahead, and prepared the vent hole (3B) [claim 2] The vertical-axes wind mill for laminating loading to the upper-layers tower of claim 1 which attaches sail cloth up and down and is characterized by the thing of the fossilia ossis mastodi section (4) which formed in the rocket form the part equivalent to the fossilia ossis mastodi of the ship's bottom of the center section of the duct blade (3) constituted by claim 1, and its fossilia ossis mastodi section considered as sail wing wind-mill BURETO

## [Detailed Description of the Invention]

[0001]

[Industrial Application]

[0001]

[Industrial Application] This invention relates to the vertical-axes wind mill for carrying out laminating loading at an upper-layers tower still in more detail about the wind mill for taking out wind-force energy efficiently.

[0002]

[Description of the Prior Art] In the Prior art of a vertical-axes wind mill, there are the Darius wind mill and gyroscope mill wind mill of a lift form, and a Savonius windmill is in the wind mill of a resistance form. It was impossible for the wind mill of said lift form to be a high-speed form, for starting nature to be very bad in spite of being suitable for the generation of electrical energy, and for it to be necessary to install in the location which the strong wind of C blows in the condition of carrying out, and for a difficulty to be in a site

condition, and to have carried out laminating loading of many wind mills at an upper-layers tower, since equipment itself is a longwise form. Next, since effectiveness was inferior, the Savonius windmill of a resistance form was hardly used for the generation of electrical energy. The wind mill of this invention is developed in order to conquer the defect of a wind mill in the first half. The wind mill which equipped the duct blade of this invention in the conventional wind-mill method did not exist.

[0003]

[Problem(s) to be Solved by the Invention] It is for carrying out laminating loading of many windmills at the built upper-layers building, and the object on the application of the wind mill of this invention is using wind-force energy effectively most efficiently, and, for that purpose, is a fundamental technical problem in strong wind starting nature and a lightweight thing first on the need of using extensively an air current 150 meters or more above ground. That is, development of the wind mill which combines the description of the lift form where conquered the badness of the starting nature of the lift form wind mill in said Prior art, and \*\*\*\*\* of a resistance form and transverse-plane resistance of a head wind were conquered, and the large description of the starting nature of a resistance form and running torque was desired.

[0004]

[Means for Solving the Problem] A drawing explains the configuration of the wind mill of this invention. Before forming a side face in the periphery section side of the main plane 2 in the shape of a ship's bottom and covering the front to the main plane 2 formed in the drawing 1 -wind-mill revolving shaft 1 in the airfoil profile at the symmetry profile, form covering device 3A. Next, to a main plane 2, a certain amount of elevation angle is given, the duct blade 3 constituted by preparing vent hole 3B in order to improve the negotiation of an air current at covering device 3A before being formed is fixed and taken toward the motion direction, and it is what \*\*\*\*. The wind-mill blade constituted by attaching the duct blade 3 which prepared before covering device 3A and vent hole 3B ahead, and was formed in the main plane 2 in the shape of a ship's bottom in the side face above was constituted as a vertical-axes wind mill of a 2-3-sheet profile.

[0005]

[Function] It acts as a form which always generates lift by having formed the form of the airfoil profile of a main plane 2 in the symmetry profile. Next, by having formed the side face of the duct blade 3 in the shape of a ship's bottom, and having given and attached a certain amount of elevation angle to the motion direction, it becomes the operation which surely generates lift during a revolution operation.

[0006] Next, while giving the starting nature of a wind mill by having formed covering device 3A and having prepared vent hole 3B before covering the front side of the duct blade 3, the technical problem of the transverse-plane resistance on the design of a wind-mill blade was solved by having prepared vent hole 3B for the transverse-plane resistance to the motion direction. The wind mill of the ideal gestalt which has the engine performance in which the description of a lift form and the description of the starting nature of a resistance form were harnessed as a technical problem which is equal to the propeller mold wind mill in the wind-mill engine performance of a \*\*\*\* straw vertical-axes wind mill was called for conventionally. The description of this invention is a new method which does not have an example in the conventional wind-mill method which equipped the duct blade 3 which has the description of a lift form and a resistance form at the head of a main plane 2.

[0007] Next, a drawing explains the working principle of the wind mill of this invention. the condition of the side elevation seen from the condition of having installed the wind mill of drawing 4 , and the duct blade 3 which attached the elevation angle at the head of a main plane 2, and was formed in the shape of \*\*\*\*\* in installation is shown. The condition of vent-hole 3B Having formed before covering device 3A in it, having covered the bonnet ahead, and having prepared in it was shown. Were the form which generates lift, even if located in which location under actuation according to the gestalt of the shape of this ship's bottom, before covering vent hole 3B, the effectiveness of the carrier style of an air current was missed by covering device 3A, the air current was missed by vent hole 3B with \*\* in slight height, and the problem of technical-problem conquest of transverse-plane resistance of the wind mill of a resistance form was solved.

[0008] Next, about having used the duct blade 3 of claim 2 as the sail wing wind-mill blade, when the wind mill of this invention is super-enlarged, it constitutes to a sail wing wind-mill blade for weight relief, and the working principle is completely the same as said claim 1.

[0009] Next, the explanatory view of drawing 5 of operation explains the working principle of the wind mill of this invention. The wind shall blow from the upper part of a drawing first. Next, explanation up drawing left-hand side of a working principle is made into the side which receives a tail wind, and right-hand side is made into the side which receives a head wind. Make I into an air current and let RO, Ha, NI, and HO be the locations of the duct blade under revolution actuation.

[0010] Since drawing 5 and the duct blade 3 in the case of the condition of the location of upper RO give an elevation angle and are attached in the main plane 2 at the duct blade 3 when [ this ] air-current I will be received in the state of an abbreviation right angle, it acts like 1 of air-current I, lift is generated, and a wind-mill blade operates ahead. Next, in the case of Ha's location, an air current serves as an operation which acts on before covering device 3A like 2 of I, serves as a gestalt of the carrier style of a resistance form, and closes the starting nature of a wind-mill blade if it is a right line. Next, when the location of a blade is in the condition of NI, air-current I 3 will be in the condition of acting on the inner circumference section rear and before covering device 3A, and receiving a tail wind, and will generate lift. Next, when the location of a blade is in the condition of HO, it will be in the condition of receiving a head wind, and a front air current is back missed by vent hole 3B. Simultaneously, an inner circumference section side acts like air-current I 4, and generates lift. As mentioned above, it is the working principle of the wind mill of this invention which equipped the duct blade 3.

[0011] The description of this invention carried out breeze starting to the duct blade 3 which attached and attached the elevation angle in the main plane 2 in the right line at before covering device 3A by the function of the carrier style at the time of the condition of a tail wind, and conquered the problem of the transverse-plane resistance which was the technical problem of a resistance form by having prepared vent

hole 3B.

[0012]

[Example] The example of this invention is explained based on a drawing. Drawing 1 is the example constituted by the three-sheet blade which equipped the duct blade 3 which fixed and attached in the wind-mill revolving shaft 1 the main plane 2 which formed the airfoil profile in the symmetry profile, formed the side face in the point of a main plane in the shape of a ship's bottom, and prepared vent hole 3B in before covering device 3A.

[0013] Drawing 3 is the example [0014] which formed and made the rocket form the fossilia ossis mastodi section 4 of the center of the duct blade 3 of this invention of claim 2, attached sail cloth 5 up and down, and was constituted to the sail wing wind-mill blade. Drawing 6 shows the example which carried out laminating loading of the wind mill of this invention one after another from the bottom for each class of the upper-layers tower 12 with the generation-of-electrical-energy accessory compartment 8 and the wind-mill room 7.

[0015]

[Effect of the Invention] The wind mill which equipped the duct blade of this invention is a wind mill of the new type in which an example is not conventionally seen to a wind mill. A duct blade by having the function which solved the technical problem of the badness of the starting nature of the wind mill of the conventional lift form, transverse-plane resistance of the head wind of a wind direction of a resistance form wind mill, and transverse-plane resistance of the motion direction Since it has the effectiveness which makes breeze starting easy, when installing a wind mill and carrying out wind power, it has the effectiveness that laminating loading is carried out, a large-scale window FARM is built at an upper-layers tower, and wind-force energy can be used most effectively, by easing the site condition of wind-mill installation greatly.

[Brief Description of the Drawings]

[Drawing 1] The perspective view showing the operation condition of the wind mill which equipped the duct blade of this invention

[Drawing 2] The side elevation seen from the outside of the duct blade

of this invention

[Drawing 3] The side elevation which formed the duct blade of this invention in the sail wing wind mill

[Drawing 4] The side elevation which looked at the attachment condition of a duct blade from the top face

[Drawing 5] The explanatory view of operation having shown the working principle of the duct blade of the wind mill of this invention

[Drawing 6] Operation drawing showing the example which carried out laminating loading of the wind mill of this invention for each class of an upper-layers tower

[Description of Notations]

1 is a wind-mill revolving shaft.

2 is a main plane.

3 is a duct blade.

3A is a before covering device.

3B is a vent hole.

4 Fossilia ossis mastodi section

5 Sail cloth

6 Column

7 Wind-mill room

8 Generation-of-electrical-energy accessory compartment

9 Roof

10 Leg

11 \*\*\*\*

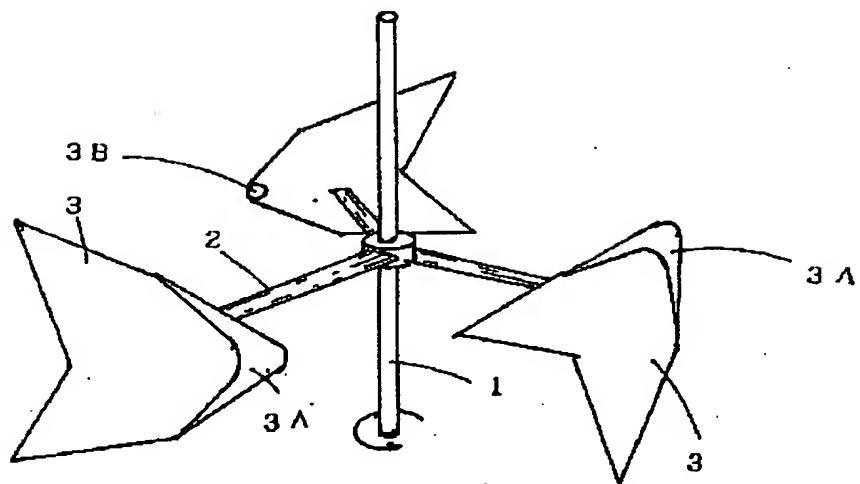
12 Upper-layers tower

I Air current

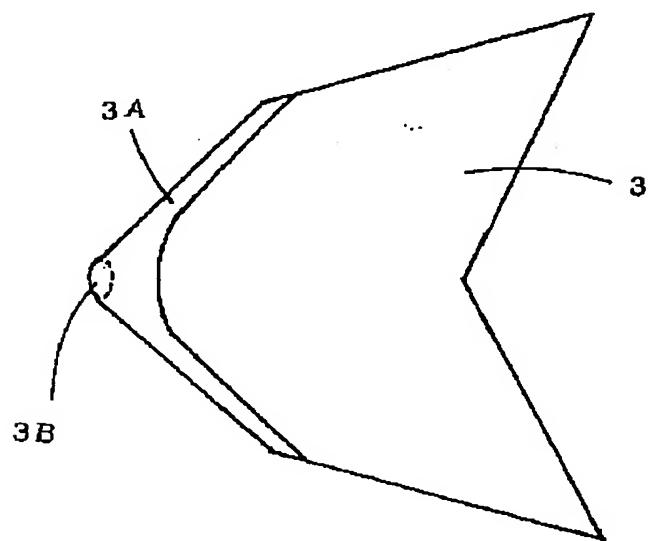
I 1, I 2, I 3, I 4, \*\*, an operation of an air current

The location of RO, Ha, NI, HO, and a \*\* blade

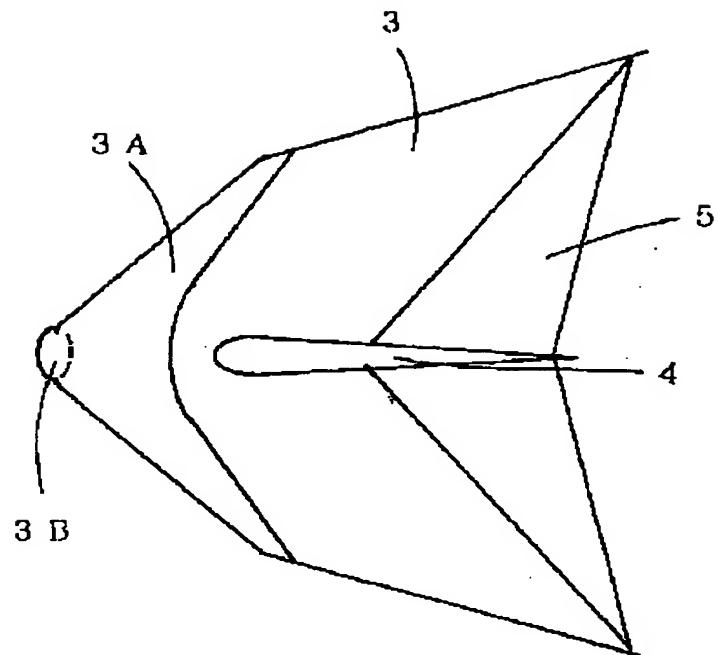
Drawing 1



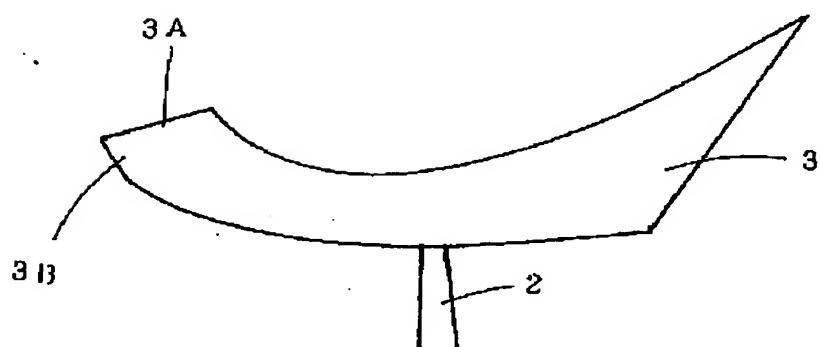
Drawing 2



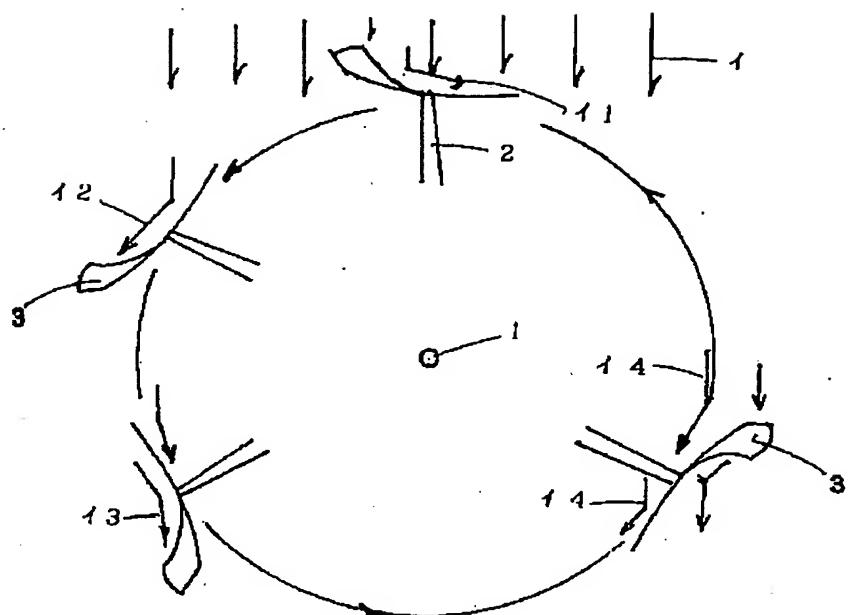
Drawing 3



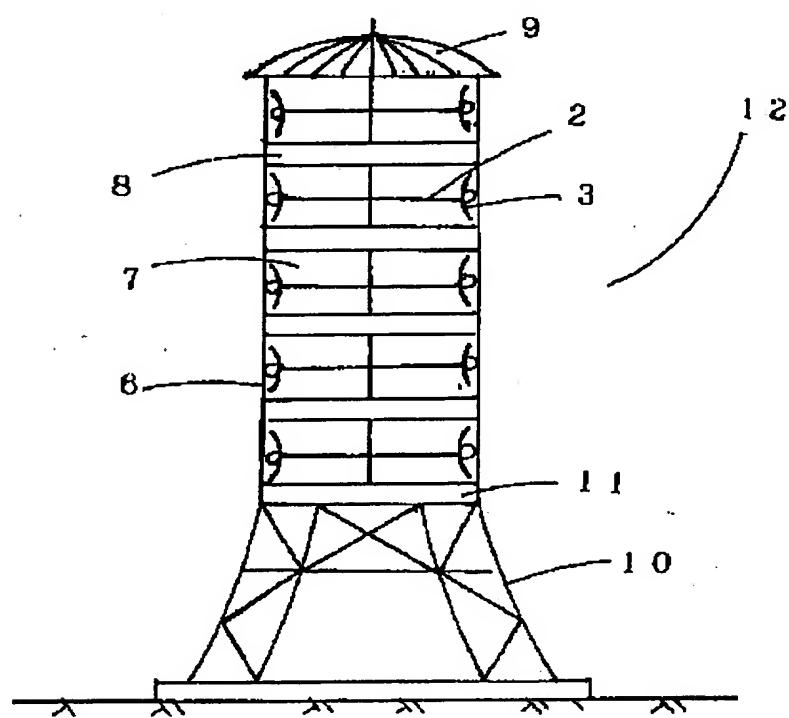
Drawing 4



Drawing 5



Drawing 6



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